UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,022	10/23/2003	Vladimir Bulovic	Y2086-10301	1746

42109 7590 07/16/2009

DUANE MORRIS LLP - NY
PATENT DEPARTMENT
1540 BROADWAY
NEW YORK, NY 10036-4086

EXAMINER	
BODDIE, WILLIAM	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
07/16/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/693,022	Applicant(s) BULOVIC ET AL.
	Examiner WILLIAM L. BODDIE	Art Unit 2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,7,8,12-14,16-18,20,21 and 29-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 7-8, 12-14, 16-18, 20-21 and 29-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In an amendment dated, May 8th, 2009, the Applicant traversed the rejections of claims 1, 7-8, 12-14, 16-18, 20-21 and 29-42 and amended claims 29, 33, 36 and 39. Currently claims 1, 7-8, 12-14, 16-18, 20-21 and 29-42 are pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 8th, 2009 has been entered.

Response to Amendment

3. Applicants and their representatives are reminded of MPEP 714.II.C(B) which **requires** that any matter added to claims be underlined. Claim 29 introduced new limitations namely, "two" which was not underlined.

4. Applicants and their representatives are asked to keep these requirements in mind when submitting any future amendments.

Response to Arguments

5. Applicant's arguments with respect to claims 1, 7-8, 12-14, 16-18, 20-21 and 29-42 have been considered but are not persuasive.

6. On pages 8-10 of the Remarks, the Applicants argue that the combination of Tamura with Yuyama does not teach a photodetector arranged on the lower surface of the transparent substrate.

7. The Examiner must respectfully disagree. To clarify the nature of the proposed combination, Tamura is seen as teaching the vast majority of the claim limitations in claim 1 for example. The single limitation which Tamura is lacking is the positioning of a photodetector on a lower surface of the substrate. Most importantly for the current discussion it is important to note that Tamura discloses disposing the light emitting devices on a side of a transparent substrate. The photodetectors are positioned in a vast array of locations by Tamura including on the same surface (fig. 2b), on the side of the substrate (fig. 3b), and even below the OLEDs (fig. 4b).

With this in mind we turn to the disclosure of Yuyama. Yuyama, much like Tamura, discloses numerous locations for the photodetectors. In figure 11 we see the positioning of a photodetector, 10, on an opposite surface of the substrate than the OLEDs. In other words, Yuyama discloses placing a transparent substrate *between* the photodetectors and the OLEDS. It is this teaching and disclosure that is seen as obvious to one of ordinary skill in the art to incorporate into the invention of Tamura. Upon combining the figure 11 embodiment of Yuyama with the invention of Tamura it seems clear that one of ordinary skill in the art would position, or at least try positioning, the photodetector of Tamura on the lower surface of the transparent substrate of Tamura.

8. On page 9, the Applicants argue that the air gap in Yuyama between the OLEDs and the substrate is absolutely necessary to incorporate any of the teachings of Yuyama into other pieces of art.

The Examiner must respectfully disagree. There is no discussion within Yuyama with regards to an air gap, nor is there any mention of methods undertaken to reduce the heating of the OLEDs. Much to the contrary, Yuyama counteracts the changed white balance caused by temperature variation by use of the photodetectors to compensate the effected colors. As shown, Yuyama does not discuss an air gap nor discredit or discourage inventions which do not contain an air gap. Yuyama, actually supplies a method to *reduce* concern over temperature variations of the OLEDs that are driven, as such any cooling measures would become more expendable.

9. On pages 14-15, the Applicants argue that Henmi does not disclose having at least two photodetectors.

The Examiner must again disagree. As discussed in the figure 11 embodiment of Henmi, multiple photodetectors (23a and 23b) are contemplated by Henmi.

The remaining arguments addressed within the Remarks are identical to those addressed above and as such are no further addressed.

As shown above the rejections are seen as sufficient and are updated to incorporate the newly added limitations but are otherwise maintained.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 33-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically each independent claim, 33, 36 and 39, now require that the photodetector be located **both** "on the lower surface" and "on the upper surface." This is seen as being contradictory and as such the Applicants invention is not particularly pointed out. Applicants are requested to amend the claims to distinctly locate the photodetector on **either** the lower surface or the upper surface.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 1, 7-8, 13-14, 16-17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al. (US 2002/0130326) in view of Yuyama et al. (US 6,069,676).

With respect to claim 1, Tamura discloses, an array, comprising:

a plurality of light emitting devices (12-14 in fig. 3a,b) disposed on a transparent substrate (10 in fig. 3b), the transparent substrate having an upper surface (bottom of 10 in fig. 3b) that contacts the light emitting devices, a lower surface distal from the light emitting devices (top of 10 in fig. 3b) and a plurality of side surfaces (right side of 10 in

fig. 3b), each of the side surfaces being substantially perpendicular to the upper surface (clear from fig. 3b); and

at least one photodetector (15-17 in fig. 3a/b) that detects light emitted through the substrate from the light emitting devices (para. 45).

Tamura does not expressly disclose that the at least one photodetector is arranged on the lower surface of the transparent substrate.

Yuyama discloses, an array, comprising:

a plurality of light emitting devices (2a-c in fig. 11) disposed under a transparent substrate (4 in fig. 11); and

at least one photodetector (10 in fig. 11) arranged on an opposite surface of the transparent substrate (clear from fig. 11) for detecting light emitted through the substrate from the light emitting devices.

Yuyama and Tamura are analogous art because they are both from the same field of endeavor namely, detecting light emitted by LEDs and compensating the driving of the LEDs based on the detected light.

At the time of the invention it would have been obvious to one or ordinary skill in the art to locate the photosensors of Tamura on the lower surface (top of 10 in fig. 3b) of the transparent substrate of Tamura, as taught by Yuyama.

The motivation for doing so would have been to avoid obstructing the exiting light (Yuyama; col. 6, lines 32-35).

With respect to claim 7, Tamura and Yuyama disclose, the array of claim 1 (see above).

The above embodiment of Tamura fails to disclose locating a photodetector over outer periphery edges of the upper surface.

Tamura further discloses in an alternative embodiment, locating a photodetector (9 in fig. 2a/b) over outer periphery edges of the upper surface (10 in fig. 2b).

At the time of the invention it would have been obvious to one of ordinary skill in the art to combine the alternative embodiment of Tamura teaching of upper surface photodetectors with the already combined first embodiment of Tamura and Yuyama, which teaches lower surface photodetectors.

The motivation for doing so would have been to achieve a more accurate feedback detection signal.

With respect to claim 8, Tamura and Yuyama disclose, the array of claim 1 (see above).

Tamura further discloses, a feedback circuit (5 in fig. 1) that measures a brightness level for each of the plurality of light emitting devices and varies a voltage applied to individual ones of the light emitting devise to maintain a brightness level of each of the light emitting devices at a substantially constant level (paras. 12-13).

It should be noted that Yuyama additionally discloses, a feedback circuit (11a-c in fig. 5) that measures a brightness level for each of the plurality of light emitting devices and varies a voltage applied to individual ones of the light emitting devise to maintain a brightness level of each of the light emitting devices at a substantially constant level (col. 3, lines 46-54; for example).

With respect to claim 13, Tamura and Yuyama disclose, the array of claim 1 (see above).

Tamura further discloses, a display (col. 1, lines 6-8) comprising an array of light emitting devices.

With respect to claim 14, Tamura discloses, a method for forming an array, comprising:

forming a plurality of light emitting devices (12-14 in fig. 3a/b) disposed on a transparent substrate (10 in fig. 3b), said transparent substrate having an upper surface (bottom of 10 in fig. 3b) contacting the light emitting devices, a lower surface distal from the light emitting devices (top of 10 in fig. 3b) and at least one side surface (right side of 10 in fig. 3b) substantially perpendicular to said upper surface of the substrate; and

forming a photodetector (15-17 in fig. 3a/b) that detects light emitted through the substrate from the light emitting devices (para. 45).

Tamura does not expressly disclose that the at least one photodetector is arranged on the lower surface of the transparent substrate.

Yuyama discloses, a method for forming an array, comprising:

forming a plurality of light emitting devices (2a-c in fig. 11) disposed under a transparent substrate (4 in fig. 11); and

forming at least one photodetector (10 in fig. 11) arranged on an opposite surface of the transparent substrate (clear from fig. 11) for detecting light emitted through the substrate from the light emitting devices.

At the time of the invention it would have been obvious to one or ordinary skill in the art to locate the photosensors of Tamura on the lower surface (top of 10 in fig. 3b) of the transparent substrate of Tamura, as taught by Yuyama.

The motivation for doing so would have been to avoid obstructing the exiting light (Yuyama; col. 6, lines 32-35).

With respect to claim 16, Tamura and Yuyama disclose, the method of claim 14 (see above).

Tamura further discloses, forming the photodetector on the side surface of the substrate (clear from fig. 3b).

With respect to claim 17, Tamura and Yuyama disclose, the method of claim 14 (see above).

Tamura further discloses, wherein the photodetector includes a plurality of photodetectors (clear from fig. 3a).

It should be additionally noted that Yuyama also discloses, a plurality of photodetectors (fig. 8; for example).

With respect to claim 20, claim 20 is seen as sufficiently equivalent to claim 8. As such claim 20 is rejected on the same merits shown above in claim 8.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al. (US 2002/0130326) in view of Yuyama et al. (US 6,069,676) and further in view of Yamazaki et al. (US 6,424,326).

With respect to claim 12, Tamura and Yuyama disclose, the array of claim 8 (see above).

Tamura further discloses, wherein the feedback circuit (5 in fig. 1) includes a compensation factor generator (5 in fig. 1) for generating a compensation factor for each of the plurality of light emitting devices (para. 40).

Neither Yuyama nor Tamura expressly disclose, a memory array for storing the compensation factor for each of the plurality of light emitting devices.

Yamazaki discloses, a display detecting brightness (fig. 1) and a memory array (204 in fig. 6) for storing a compensation factor for each of the plurality of light emitting devices (col. 12, lines 21-55).

Yamazaki, Yuyama and Tamura are analogous art because they are all directed to a similar problem solving area, namely correcting uneven display luminance.

At the time of the invention it would have been obvious to one of ordinary skill in the art to store the correction factors generated by Yuyama and Tamura in a memory array as taught by Yamazaki.

The motivation for doing so would have been to store an ideal luminance to compare the current state of the display against, thus achieving a more uniform and ideal luminance (Yamazaki; col. 12, lines 28-44).

15. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al. (US 2002/0130326) in view of Yuyama et al. (US 6,069,676) and further in view of Cok (US 7,026,597).

With respect to claim 18, Tamura and Yuyama discloses, the method of claim 17 (see above).

Tamura further discloses, that photodetectors are formed on the side surfaces (18 in fig. 3b).

Neither Yuyama nor Tamura expressly disclose, that the photo detectors are formed on each side surface.

Cok discloses, forming photodetectors on each edge of a display (20 in fig. 5).

Cok, Yuyama and Tamura are analogous art because they are from the same field of endeavor namely, placement of photodetectors within a display.

At the time of the invention it would have been obvious to one of ordinary skill in the art to include photodetectors along each side as taught by Cok in the display of Yuyama and Tamura.

The motivation for doing so would have been improved illumination detection (Cok; col. 1, lines 65-67).

16. Claims 29-31 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henmi et al. (US 7,154,492) in view of Yuyama et al. (US 6,069,676).

With respect to claim 29, Henmi discloses, an array (fig. 12, for example), comprising:

a plurality of light emitting devices (20 in fig. 3-4) formed (clear from fig. 3) on a surface of a transparent substrate (11 in fig. 3-4) the transparent substrate having an upper surface (bottom of 11 in fig. 4 and top of 11 in fig. 3) that contacts the light emitting device (clear in figs. 3-4), a lower surface distal from the light emitting device (opposite of the upper surface defined above) and a plurality of side surfaces (edges of 11 in figs. 3-4); and

at least two photodetectors (23a-b in fig. 11a) arranged on a surface of the transparent substrate for detecting light emitted from the light emitting devices (clear from fig. 4).

Henmi does not expressly disclose, wherein the photodetector is arranged on an opposite surface of the transparent substrate.

Yuyama discloses, an array, comprising:

a plurality of light emitting devices (2a-c in fig. 11) disposed under a transparent substrate (4 in fig. 11); and

at least two photodetectors (10a-b in fig. 8 and 10 in fig. 11) arranged on an opposite surface of the transparent substrate (clear from fig. 11) for detecting light emitted through the substrate from the light emitting devices.

Yuyama and Henmi are analogous art because they are both from the same field of endeavor namely, detecting light emitted by LEDs and compensating the driving of the LEDs based on the detected light.

At the time of the invention it would have been obvious to one or ordinary skill in the art to locate one of the photosensors of Henmi on the opposite surface (top of 10 in fig. 4) of the transparent substrate of Henmi, as taught by Yuyama.

The motivation for doing so would have been to avoid obstructing the exiting light (Yuyama; col. 6, lines 32-35).

With respect to claim 30, Henmi and Yuyama disclose, the array of claim 29 (see above).

Henmi further discloses, at least one additional photodetector (23b in fig. 11) formed over the outer periphery edges of the surface of the transparent substrate (clear from fig. 4).

With respect to claim 31, Henmi and Yuyama disclose, the array of claim 29 (see above).

Henmi further discloses, a feedback circuit (40-43 in fig. 5) that measures a brightness level for each of the plurality of light emitting devices, and varies a voltage applied to individual ones of the light emitting devices to maintain a brightness level of each of the light emitting devices at a substantially constant level (clear from fig. 9).

With respect to claim 33, Henmi discloses an array (fig. 12; for example), comprising a plurality of light emitting devices (20 in fig. 4) disposed over a substrate (11 in fig. 4) having an upper surface (bottom of 11 in fig. 4 and top of 11 in fig. 3) that contacts the light emitting device (clear in figs. 3-4), a lower surface distal from the light emitting device (opposite of the upper surface defined above) and a plurality of side surfaces (edges of 11 in figs. 3-4), and a photodetector (23 in fig. 4) that detects light emitted through the substrate from the light emitting device (clear from fig. 4), wherein at least one light emitting device comprises an OLED (col. 1, line 9), wherein the photodetector is positioned on the upper surface (photodetector, 23, is positioned on same surface, upper surface, in fig. 18 as light emitting devices).

Henmi does not expressly disclose wherein the photodetector is on the lower surface.

Yuyama discloses, an array, comprising:

a plurality of light emitting devices (2a-c in fig. 11) disposed under a transparent substrate (4 in fig. 11); and

at least one photodetector (10 in fig. 11) arranged on an opposite surface of the transparent substrate (clear from fig. 11) for detecting light emitted through the substrate from the light emitting devices.

Yuyama and Tamura are analogous art because they are both from the same field of endeavor namely, detecting light emitted by LEDs and compensating the driving of the LEDs based on the detected light.

At the time of the invention it would have been obvious to one or ordinary skill in the art to locate one of the photosensors of Henmi on the opposite surface (top of 10 in fig. 4) of the transparent substrate of Henmi, as taught by Yuyama.

The motivation for doing so would have been to avoid obstructing the exiting light (Yuyama; col. 6, lines 32-35).

With respect to claim 34, Henmi discloses, the array of claim 33 (see above), further comprising a feedback circuit (40-43 in fig. 5) that measures a brightness level for each of the plurality of light emitting devices, and varies a voltage applied to individual ones of the light emitting devices to maintain a brightness level of each of the light emitting devices at a substantially constant level (clear from fig. 9).

17. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Henmi et al. (US 7,154,492) in view of Yuyama et al. (US 6,069,676) and further in view of Yamazaki et al. (US 6,424,326).

With respect to claim 32, Henmi and Yuyami disclose, the array of claim 31 (see above).

Henmi further discloses, wherein the feedback circuit includes a compensation factor generator (s15 in fig. 9) for generating a compensation factor for each of the plurality of light emitting devices (s16-s17 in fig. 9).

Neither Henmi nor Yuyami expressly disclose, a memory array for storing the compensation factor for each of the plurality of light-emitting devices.

Yamazaki discloses, a display detecting brightness (fig. 1) and a memory array (204 in fig. 6) for storing a compensation factor for each of the plurality of light emitting devices (col. 12, lines 21-55).

Yamazaki, Yuyama and Henmi are analogous art because they are all directed to a similar problem solving area, namely correcting uneven display luminance.

At the time of the invention it would have been obvious to one of ordinary skill in the art to store the correction factors generated by Yuyama and Henmi in a memory array as taught by Yamazaki.

The motivation for doing so would have been to store an ideal luminance to compare the current state of the display against, thus achieving a more uniform and ideal luminance (Yamazaki; col. 12, lines 28-44).

18. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Henmi et al. (US 7,154,492) in view of Yuyama et al. (US 6,069,676) and further in view of Yamazaki et al. (US 6,424,326).

With respect to claim 35, Henmi discloses, the array of claim 34 (see above), wherein the feedback circuit includes a compensation factor generator (s15 in fig. 9) for generating a compensation factor for each of the plurality of light emitting devices (s16-s17 in fig. 9).

Henmi does not expressly disclose, a memory array for storing the compensation factor for each of the plurality of light-emitting devices.

Yamazaki discloses, a display detecting brightness (fig. 1) and a memory array (204 in fig. 6) for storing a compensation factor for each of the plurality of light emitting devices (col. 12, lines 21-55).

Yamazaki and Henmi are analogous art because they are all directed to a similar problem solving area, namely correcting uneven display luminance.

At the time of the invention it would have been obvious to one of ordinary skill in the art to store the correction factors generated by Henmi in a memory array as taught by Yamazaki.

The motivation for doing so would have been to store an ideal luminance to compare the current state of the display against, thus achieving a more uniform and ideal luminance (Yamazaki; col. 12, lines 28-44).

19. Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henmi et al. (US 7,154,492) in view of Yuyama et al. (US 6,069,676) and further in view of Hunter (US 6,356,029).

With respect to claim 36, Henmi discloses an array (fig. 12; for example), comprising a plurality of light emitting devices (20 in fig. 4) disposed over a substrate

(11 in fig. 4) having an upper surface (bottom of 11 in fig. 4 and top of 11 in fig. 3) that contacts the light emitting device (clear in figs. 3-4), a lower surface distal from the light emitting device (opposite of the upper surface defined above) and a plurality of side surfaces (edges of 11 in figs. 3-4), and a photodetector (23 in fig. 4) that detects light emitted through the substrate from the light emitting device (clear from fig. 4), wherein at least one light emitting device comprises an OLED (col. 1, line 9), wherein the photodetector is positioned on the upper surface (photodetector, 23, is positioned on same surface, upper surface, in fig. 18 as light emitting devices).

Henmi does not expressly disclose, wherein the photodetector is on the lower surface, i.e., arranged on an opposite surface of the transparent substrate.

Yuyama discloses, an array, comprising:

a plurality of light emitting devices (2a-c in fig. 11) disposed under a transparent substrate (4 in fig. 11); and

at least one photodetector (10 in fig. 11) arranged on an opposite surface of the transparent substrate (clear from fig. 11) for detecting light emitted through the substrate from the light emitting devices.

Yuyama and Henmi are analogous art because they are both from the same field of endeavor namely, detecting light emitted by LEDs and compensating the driving of the LEDs based on the detected light.

At the time of the invention it would have been obvious to one or ordinary skill in the art to locate one of the photosensors of Henmi on the opposite surface (top of 10 in fig. 4) of the transparent substrate of Henmi, as taught by Yuyama.

The motivation for doing so would have been to avoid obstructing the exiting light (Yuyama; col. 6, lines 32-35).

Neither Yuyama nor Henmi expressly disclose a PLED.

Hunter discloses a PLED display suffering from ageing effects (col. 2, lines 31-37).

Hunter, Yuyama and Henmi are analogous art because they are both directed to solving the same problem namely, degradation of display quality over time in EL devices.

At the time of the invention it would have been obvious to replace the OLED devices of Henmi and Yuyama with the PLED elements of Hunter.

The motivation for doing so would have been the ease of fabrication of PLED elements (Hunter; col. 1, lines 23-26).

With respect to claim 37, Henmi, Yuyama and Hunter disclose, the array of claim 36 (see above).

Henmi further discloses, a feedback circuit (40-43 in fig. 5) that measures a brightness level for each of the plurality of light emitting devices, and varies a voltage applied to individual ones of the light emitting devices to maintain a brightness level of each of the light emitting devices at a substantially constant level (clear from fig. 9).

20. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Henmi et al. (US 7,154,492) in view of Yuyama et al. (US 6,069,676) and further in view of Hunter (US 6,356,029) and Yamazaki et al. (US 6,424,326).

With respect to claim 38, Henmi and Hunter disclose, the array of claim 37 (see above).

Henmi further discloses, wherein the feedback circuit includes a compensation factor generator (s15 in fig. 9) for generating a compensation factor for each of the plurality of light emitting devices (s16-s17 in fig. 9).

Neither Hunter nor Henmi expressly disclose, a memory array for storing the compensation factor for each of the plurality of light-emitting devices.

Yamazaki discloses, a display detecting brightness (fig. 1) and a memory array (204 in fig. 6) for storing a compensation factor for each of the plurality of light emitting devices (col. 12, lines 21-55).

Yamazaki, Hunter and Henmi are analogous art because they are all directed to a similar problem solving area, namely correcting uneven display luminance.

At the time of the invention it would have been obvious to one of ordinary skill in the art to store the correction factors generated by Hunter and Henmi in a memory array as taught by Yamazaki.

The motivation for doing so would have been to store an ideal luminance to compare the current state of the display against, thus achieving a more uniform and ideal luminance (Yamazaki; col. 12, lines 28-44).

21. Claims 39-40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henmi et al. (US 7,154,492) in view of Yuyama et al. (US 6,069,676) and further in view of Bawendi et al. (US 6,501,091).

With respect to claim 39, Henmi discloses an array (fig. 12; for example), comprising a plurality of light emitting devices (20 in fig. 4) disposed over a substrate (11 in fig. 4) having an upper surface (bottom of 11 in fig. 4 and top of 11 in fig. 3) that contacts the light emitting device (clear in figs. 3-4), a lower surface distal from the light emitting device (opposite of the upper surface defined above) and a plurality of side surfaces (edges of 11 in figs. 3-4), and a photodetector (23 in fig. 4) that detects light emitted through the substrate from the light emitting device (clear from fig. 4), wherein at least one light emitting device comprises an OLED (col. 1, line 9), wherein the photodetector is positioned on the upper surface (photodetector, 23, is positioned on same surface, upper surface, in fig. 18 as light emitting devices).

Henmi does not expressly disclose, wherein the photodetector is on the lower surface, i.e., arranged on an opposite surface of the transparent substrate.

Yuyama discloses, an array, comprising:

a plurality of light emitting devices (2a-c in fig. 11) disposed under a transparent substrate (4 in fig. 11); and

at least one photodetector (10 in fig. 11) arranged on an opposite surface of the transparent substrate (clear from fig. 11) for detecting light emitted through the substrate from the light emitting devices.

Yuyama and Henmi are analogous art because they are both from the same field of endeavor namely, detecting light emitted by LEDs and compensating the driving of the LEDs based on the detected light.

At the time of the invention it would have been obvious to one or ordinary skill in the art to locate one of the photosensors of Henmi on the opposite surface (top of 10 in fig. 4) of the transparent substrate of Henmi, as taught by Yuyama.

The motivation for doing so would have been to avoid obstructing the exiting light (Yuyama; col. 6, lines 32-35).

Neither Yuyama nor Henmi expressly disclose a QDLED.

Henmi does not expressly disclose a QDLED.

Bawendi discloses a QDLED display (title).

Bawendi and Henmi are analogous art because they are both from the same field of endeavor namely, high quality LED based displays.

At the time of the invention it would have been obvious to replace the OLED devices of Henmi with the QDLED elements of Bawendi.

The motivation for doing so would have been the availability of additional color choices (Bawendi; col. 1, lines 35-53).

With respect to claim 40, Henmi and Bawendi disclose, the array of claim 39 (see above).

Henmi further discloses, a feedback circuit (40-43 in fig. 5) that measures a brightness level for each of the plurality of light emitting devices, and varies a voltage applied to individual ones of the light emitting devices to maintain a brightness level of each of the light emitting devices at a substantially constant level (clear from fig. 9).

With respect to claim 42, Henmi, when combined with Bawendi, discloses a display (Henmi; col. 1, line 7) comprising the array of claim 39 (see above).

22. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Henmi et al. (US 7,154,492) in view of Yuyama et al. (US 6,069,676) and further in view of Bawendi et al. (US 6,501,091) and Yamazaki et al. (US 6,424,326).

With respect to claim 41, Henmi and Bawendi disclose, the array of claim 40 (see above).

Henmi further discloses, wherein the feedback circuit includes a compensation factor generator (s15 in fig. 9) for generating a compensation factor for each of the plurality of light emitting devices (s16-s17 in fig. 9).

Neither Bawendi nor Henmi expressly disclose, a memory array for storing the compensation factor for each of the plurality of light-emitting devices.

Yamazaki discloses, a display detecting brightness (fig. 1) and a memory array (204 in fig. 6) for storing a compensation factor for each of the plurality of light emitting devices (col. 12, lines 21-55).

Yamazaki, Bawendi and Henmi are analogous art because they are all directed to a similar problem solving area, namely correcting uneven display luminance.

At the time of the invention it would have been obvious to one of ordinary skill in the art to store the correction factors generated by Bawendi and Henmi in a memory array as taught by Yamazaki.

The motivation for doing so would have been to store an ideal luminance to compare the current state of the display against, thus achieving a more uniform and ideal luminance (Yamazaki; col. 12, lines 28-44).

Conclusion

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM L. BODDIE whose telephone number is (571)272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/William L Boddie/
Examiner, Art Unit 2629
7/16/09